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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/734,407

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Thomas L. Kuntz

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05/13/2008

MATTHEW D. RABDAU

TEKTRONIX, INC.

14150 S.W. KARL BRAUN DRIVE

P.O. BOX 500 (50-LAW)

BEAVERTON, OR 97077-0001

EXAMINER

AGHDAM, FRESHTEH N

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/734,407	Applicant(s) KUNTZ, THOMAS L.	
	Examiner FRESHTEH N. AGHDAM	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2 and 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

In the previous office action, the examiner indicated subject matter of dependent claims 3 and 4 as allowable subject matter. However, upon further, a new ground(s) of rejection is made in view of Kumura (US 2007/0036248) and Sato (US 7,142,587).

Claim Objections

Claims 1-2 and 4-6 are objected to because of the following informalities:

As to claim 1, the limitation of “the correlating step uses only real components of the received signal for improved computational efficiency where the frequency offset is expected to be within an acceptable range” is inconsistent with the disclosure of the invention (pg. 11-12) that accumulates only the real components of the correlation step.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumura (US 2007/0036248) and further in view of Sato (US 7,142,587),

As to claim 1, Kumura teaches a method of detecting a signal in a receiver comprising the steps of: delaying the received signal by a period to produce a reference signal, wherein the amount of delay is an integer multiple of the symbol period of the signal to produce the reference signal (fig. 1, par. 6); and correlating the received signal with a conjugate version of the reference signal (par. 6) to produce a correlation result, wherein the correlation result is indicative of a location of the frequency correction burst signal within the received signal (see Kanaoka under conclusion, fig. 12, par. 145), Kumura does not expressly teach that the correlating step uses only real components of the received signal for improved computational efficiency where the frequency offset is expected to be within an acceptable range. Sato teaches that the correlation step outputs only real components for improved computational efficiency where the frequency offset is expected to be within an acceptable range (col. 6, lines 38-50). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teaching of Sato into the system of Kumura for the reason stated above. One of ordinary skill in the art would recognize that the teachings of Kumura and Sato is applicable in GSM systems that utilize frequency synchronization burst (e.g. known/unique sequence of symbols of frequency synchronization burst vs. known symbol sequence of Kumura and pilot signal of Sato). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Kumura and Sato into the GSM systems that employ frequency synchronization burst.

As to claim 2, Kumura further teaches estimating the frequency offset as a function of the correlation result (par. 6).

As to claim 4, Kumura and Sato teach all the subject matter claimed in claim 1, except for the imaginary part of the correlation step determines the phase angle (col. 6 lines 38-50). However, one of ordinary skill in the art would clearly recognize that determining the quadrature components of the correlation step determines the phase angle, whereas determining the real components of the correlation step determines the location of the signal. Therefore, it would have been obvious to one of ordinary skill in the art to determine the phase angle in addition to the location of the signal in order to more accurately synchronize the receiver with the transmitter.

As to claim 5, Sato further teaches down converting the received signal to a baseband complex discrete time sample signal for input to the delaying and correlating steps as the signal received (col. 4 lines 44-60) in order to remove the carrier frequency completely for further processing the received signal and eventually recovering the transmitted signal. Therefore, it would have been obvious to one of ordinary skill in the art to direct down convert the received for the reason stated above.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kumura and Sato, further in view of Junell (US 5,953,649).

As to claim 6, Kumura and Sato teach all the subject matter claimed in claim 1, except for the step of down converting the received signal to a baseband complex discrete time sample signal by mixing the received signal with a first local oscillator signal to produce an intermediate frequency signal; mixing the sampled intermediate frequency signal with a second complex oscillator signal to produce a sample signal

with real and quadrature components. One of ordinary skill in the art would recognize that it is well known in the art to down convert the received signal to a baseband complex sample signal in the front-end portion of the receiver prior to performing any other functions on the received signal such as sync detection by down converting the received signal to the intermediate frequency signal using a mixer and an oscillator and down converting the intermediate frequency signal to the baseband signal using another mixer and oscillator as it is evidenced by Junell (Fig. 5, means 51-52; Col. 11, Lines 22-48). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Junell with Kumura and Sato for proper processing the received signal by down converting the received signal to the baseband signal prior to detecting the frequency correction burst signal.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kannaoka (US 2006/0077830) see figure 12 and paragraph 145.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRESHTEH N. AGHDAM whose telephone number is (571)272-6037. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Freshteh N Aghdam/

Examiner, Art Unit 2611

/CHIEH M FAN/

Supervisory Patent Examiner, Art Unit 2611